Small Business Innovation Research/Small Business Tech Transfer

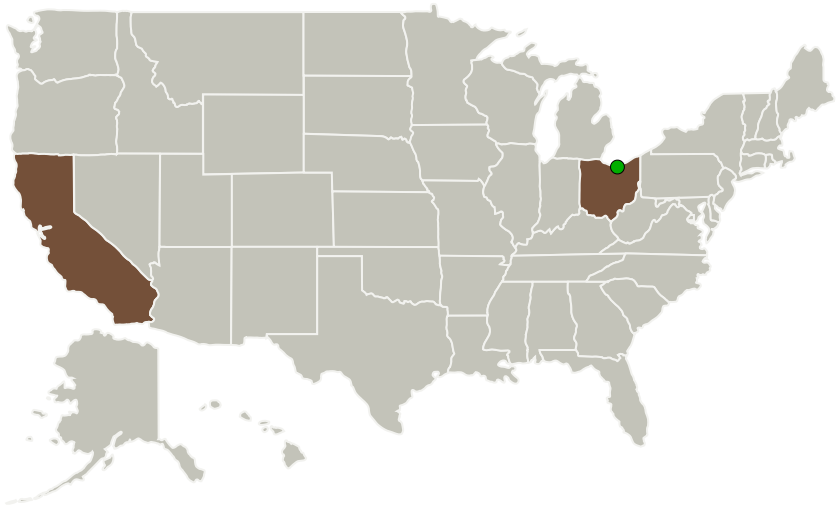
Harsh Environment Gas Sensor Array for Venus Atmospheric Measurements, Phase I

Completed Technology Project (2012 - 2012)

Project Introduction

Makel Engineering and the Ohio State University propose to develop a harsh environment tolerant gas sensor array for atmospheric analysis in future Venus missions. The proposed instrument will be very compact, require low power, and ruggedly packaged to be compatible with balloon a payload for atmospheric composition analysis. The goal is to provide information on local SOx (or total sulfur compounds if a reactive filter is used), CO, O2, NOx, H2 and/or water vapor concentrations in order to complement other measurement systems that were targeted in the 2009 Venus Flagship Mission Study such as a GC-MS, nephelometer, or camera/optical detector

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Makel Engineering, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Chico, California
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

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Primary U.S. Work Locations	
California	Ohio

Project Transitions

February 2012: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140283)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Makel Engineering, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Darby B Makel

Co-Investigator:

Darby Makel

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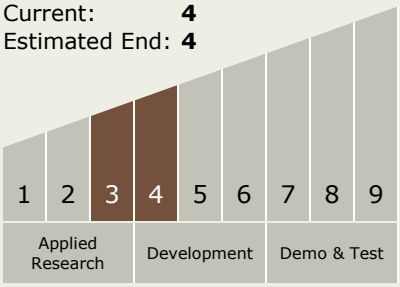
Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.6 Extreme Environments Related to Critical System Health Management

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System